Minutes of Meeting of MICC of TMIR (Technology Mission of Indian Railway) held at RDSO on 11th Dec. 2019

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(Ref: Railway Board's letter 2019/E&R/7(7)/3, dated 28.11.2019)

The Meeting of MICC (Mission Implementation & Coordination Committee) of TMIR (Technology Mission of Indian Railways) was held at RDSO on 11.12.2019. Meeting was chaired by Prof. N.S. Vyas, IIT, Kanpur (Chairman MICC) and Shri Virendra Kumar, DG/RDSO (Co-Chairman MICC). Following members of MICC were present during the meeting:

- Prof. N.S. Vyas, IIT, Kanpur (Chairman)
- Sri Virendra Kumar, DG/RDSO (Co-Chairman)
- Sri Jeetendra Singh, ED/E&R/RB (Member)
- Sri Ajay Nandan, ED/ME(Freight)/RB (Member)
- Sri D.K. Jairaj PED/Finance/RDSO (Member)
- Sri S.K. Singh, ED/Research/RDSO (Member)
- Sri O.P.Tantia MD/BESCO Ltd./Kolkata (Member)

Other Attendees

- S.K. Katiyar, CPM/MCF/Rae Bareli
- Sri R. Gopala Krishnan, GM/Data Analytics/CRIS, New Delhi
- Sri M.K. Akhouri, Director (Operation), CRIS, New Delhi
- Sri Navpreet Singh, Chief Engineer, IIT Kanpur
- Sri Kuldeep Singh, Dir/E&R/RB

In addition to above, ADG/RDSO and PEDs/EDs of Design Directorates & Quality Assurance Directorates of RDSO also attended the meeting.

- ED(Research)/RDSO emphasized the advantage of holding MICC meeting at RDSO as it provided an opportunity to RDSO officials from all Design Directorates to participate in the discussions and contribute by way of their ideas and suggestions to make the whole exercise of taking up joint collaborative research under this SPV more meaningful and useful for IR applications. Functioning of TMIR was briefly explained to all the participants.

- DG/RDSO (Co-Chairman) welcomed the members of MICC and other dignitaries present during the meeting. He requested the participants to actively participate in the deliberations. He suggested that joint collaborative research projects in areas involving new advanced and upcoming technologies like use of Big Data

Analytics, Artificial Intelligence, Machine Learning, IoT etc. for Railway Domain would yield tremendous benefits to IR.

- As per agenda, presentations were made by the participants on ongoing and already approved projects and the ideas and suggestions that came up during the discussions were noted for action and review by the concerned officials. Following presentations were made:

SN	Project	Presented By
1.	Pilot project for "Implementation of Industry 4.0 at MCF/RBL"	Mr. Navpreet Singh Chief Engineer IIT / Kanpur & his team
2.	Data Analytics on Indian Railways (a) Optimization of Passenger Rake Links (b) Online Train Run-Time Prediction Using Satellite Tracking Data	Mr. Gopala Krishnan GM Data Analytics CRIS
3.	Design Methodology & software development for railway Formation Design	ED/Geo-tech/RDSO
4.	Development of capability for testing of High Speed Rolling Stock	ED/MP/RDSO
5.	Design of Advanced Performance Next Generation Freight Bogie	PED/Wagon/RDSO

- Status of progress in the project of "Pilot Implementation of Industry 4.0 at MCF/RBL" was discussed during the meeting. The forum was informed that project module associated with the exchange of data between NC and Non-NC machine is in progress and a preliminary prototype of will be ready by end of Dec' 2019. CPM/MCF mentioned that the "Intelligent Scheduler" is the most important part of the process work-flow and therefore whole project for implementation of Industry-4.0 should be designed around "Scheduler".

  DG/RDSO (Co-chairman/MICC) desired that the status and planning should include activity-wise time lines for better monitoring of the project.

- GM/Data Analytics/CRIS presented that Indian Railways uses variety of rake patterns (86 types), covers approximate 63000 route kms with around 9000 stations,

186 maintenance depots, and 283 passenger terminals. CRIS maintains lot of train operating & satellite tracking data and the data can be used to optimize operations on IR. The two projects identified for utilization of Data bank available with CRIS were presented to the forum. MICC directed that the deliverables of these projects needs more detailing. It should also include details of the optimization techniques and methodologies proposed to be used for this project

MICC suggested that a brainstorming session on this topic can be organized with IIT/Bombay and Railway officials to understand the critical aspects that need to be addressed while defining the deliverables. This project will again be presented in the upcoming meeting of MICC.

- Discussions were held on relevance and utility of taking the project of Design Methodology & software development for railway Formation Design ahead under TMIR. ED/GE made a presentation wherein it was explained that lab testing facility for validating the numerical model is neither available with IIT/Roorkee nor with RDSO. ED/GE mentioned that RDSO is exploring possibility of using any other facility available in India for validation of formation design. It was also pointed out that the project taken-up by RDSO with IIT/R was for speed higher than 160 Kmph and upto 250 Kmph. EDME (Freight)/Rly Bd (Member MICC) commented that as per guidelines issued by Board, the existing lines will be upgraded only upto speed of 160 Kmph. RDSO should therefore focus on 160 Kmph only and examine feasibility of using the available testing facility for validation of the designs of formation for this speed. ED/GE commented that IIT/Kharagpur does have some testing facility, details of the same will be checked up for taking a final call on this project.

- ED/Testing presented the scope of the project for Development of capability for testing of High Speed Rolling Stock. Discussions were held on the need for reviewing and changing the scope of the project since with the ongoing UIC-518 project at RDSO, there has been an updation of knowledge and skill with the testing and design directorates and to that extent the scope of the TMIR approved project needs to be revised. He suggested that the scope should now include Indigenous development of software (basic algorithm and logic) for vehicle assessment & assessment of parameters like Ride Comfort, Noise interior & Exterior (as per ISO 3095, 3381 UIC 651 & EN 15892), Traction performance (EN 50388), Braking performance on track structural integrity etc. MICC decided that project proposal with revised deliverables will be presented in the next meeting.

- PED/Wagon presented the intended deliverables of the project for "Design of Advanced Performance Next Generation Freight Bogie". It was discussed that this project was only viable if the wagons with TLD of 12.1 were allowed to run on DFC

as well as the feeder routes. It was also reiterated that the margins available for any further optimization of 25T axle load wagons for reducing the track loading density was virtually nil. MICC therefore decided that a view on the issue of TLD needs to be taken up with Railway Board by ED (B&S)/RDSO for taking a final call on taking this project forward or otherwise.

- Discussions were also held on the suggested topics recommended by ME (Rly Board) for taking up joint collaborative research projects under TMIR. MICC deliberated that the technologies being used worldwide for 'Rail fracture Detection system' like UBRD, OFC based DAS etc. should be studied and presentations on these can be planned in the next meeting to take decision on track related projects and their deliverables.

- Chairman MICC requested RDSO for releasing seed money for initiation of the already approved projects. DG/RDSO assured that it would be done.

Meeting ended with a Vote of Thanks by ED (Research)/RDSO.

19/12/2019

(S.K.Singh)
ED (Research)/RDSO
& Member MICC

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Copy to:

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iv. Director (Operation), CRIS, New Delhi
v. Members of MICC of TMIR
vi. PEDs/EDs (B&S, Wagon, Testing, GE)/ RDSO